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THE ESCALATING WAR FOR
FOR ALASKAN OIL

by Arthur M. Louis

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The Escalating War for Alaskan Oil

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skan Oil

The future of several companies—and a lot more—is involved in the epic confrontation over that oil under the North Slope.

by Arthur M. Louis

Oil exploration traditionally has been a game full of risks and uncertainties. And on the North Slope of Alaska, two dozen oil companies are bedeviled by plenty of risks and uncertainties, but not the traditional ones. The companies long ago resolved the major questions about the location of the oil, the amount of it, how to get it out, and where to send it. But they continue to be stymied by a potent new force—the environmental movement. Environmentalists already have managed to postpone production on the Slope for almost four years, and there still is a chance that the lode—conservatively estimated at 12 billion barrels, or more than one-fourth of the nation's proved petroleum reserves—will never be tapped.

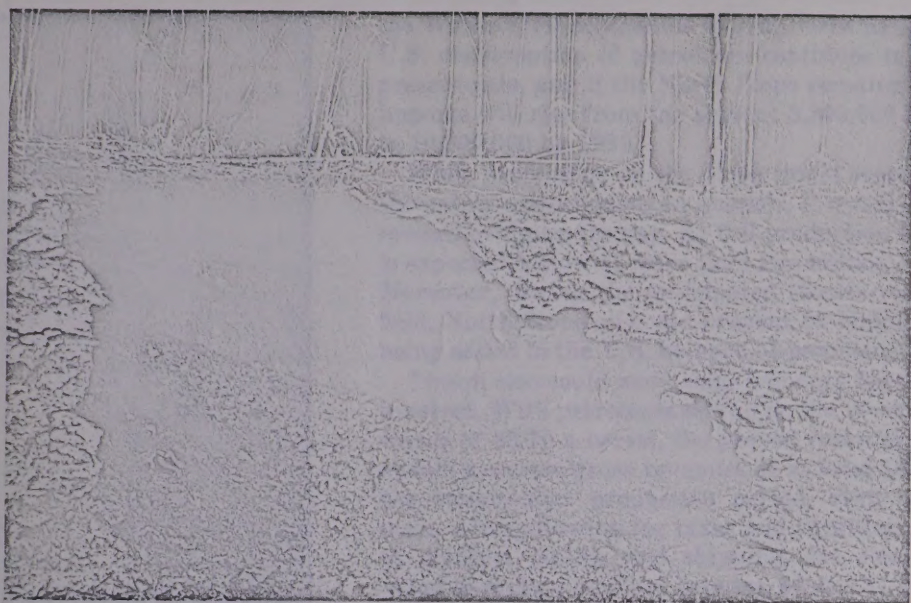
The oil companies found some cause for optimism last May, when Secretary of the Interior Rogers C. B. Morton approved construction of the proposed 789-mile pipeline between the Slope and the port of Valdez, on Alaska's southern shore. The companies say they plan to ship the oil from Valdez to markets along the West Coast, and they maintain that a trans-Alaskan pipeline is the only feasible means of getting the oil off the Slope. "We're now committed to the pipeline and nothing else," says Thomas D. Barrow, senior vice president of Standard Oil (N.J.). "It is not a situation with a first choice and a list of alternatives." The Interior Department's scientists acknowledged that the line would disrupt Alaska's fragile ecology, that possible leaks could harm the state's wildlife, and that the tanker traffic would pose a serious danger of oil spills at sea. Still, Morton declared that the "national interest" requires the U.S. to minimize its dependence on foreign oil, and that this requirement overrides the environmental hazards.

Unfortunately for the oil companies, Morton's decision is not the end of the matter. Three environmental organizations are challenging the decision in the federal courts. The odds appear to favor the oil companies, but the issue probably will go all the way to the Supreme Court, and a final decision is not expected before the end of this year. Even if the environmentalists lose, the oil won't begin to flow until late 1975 or early 1976, since it will take about three years to build the pipeline.

Meanwhile, the delays on the North Slope are already having some large side effects on the U.S. oil industry. Robert O. Anderson, chairman of Atlantic Richfield Co., insists that "the Alaskan situation has really prejudiced our dealings with the oil-producing nations of the Middle East. We have no more cards left in our hand." That may be an extreme view, but now that domestic production has begun to flatten out, the other oil-producing nations certainly are exerting increased leverage on their customers around the world. (The customers' bargaining position was weakened still further last month, when some holdings of

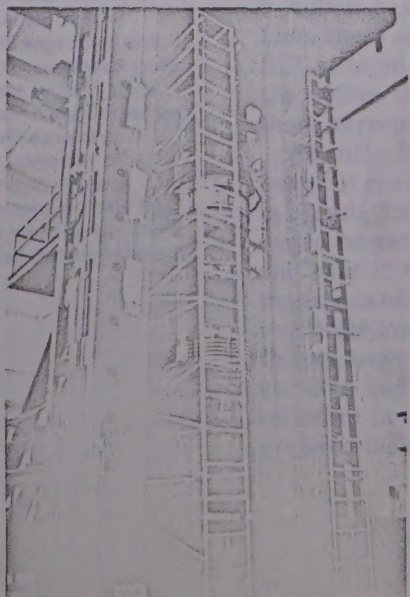
On the Slope, far above the Arctic Circle, summer brings a complete thaw, exposing the fragile tundra to the danger of serious, permanent damage from human intruders. Along the route of the proposed trans-Alaskan pipeline the oil companies will have to spend \$450 million on environmental safeguards.

Research Associates, Inc.



The Most Expensive Project in History

The extraordinary engineering problems involved in building a pipeline through the Alaskan wilderness will make the trans-Alaskan project—assuming it is built—the most expensive construction undertaking in history. Alyeska Pipeline Service Co., a consortium of seven oil companies, estimates that the 789-mile pipeline will cost \$3 billion. Alyeska's biggest engineering problems are posed by permafrost, the mixture of ice, soil, and gravel that lies only inches below the surface of the tundra; an exposed section of permafrost is shown in the top photograph. Since friction will keep the oil at temperatures of up to 150° as it moves through the pipeline, the delicate tundra would be endangered if the pipe were laid underground or on the surface. Alyeska plans to place about 45 percent of the line aboveground in those areas where the permafrost is composed largely of ice. The Department of the Interior, which authorized construction of the line across federal lands, has stipulated that Alyeska must replace any vegetation it damages. To this end, the pipeline company is sponsoring experiments by the University of Alaska at Fairbanks (center photograph) with vegetation and soil taken from the proposed route. Earthquakes are a hazard, since the 48-inch pipeline must cross five seismic zones. Alyeska says that tests at the University of California's Berkeley campus (bottom photograph) indicate that the force from a major quake could bend the pipe, but wouldn't break it.



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The oil also could work sor involved. With petroleum se wards of \$3.20 a barrel, the should generate gross revenue the twenty-year production rises. After allowing for tax of drilling, piping, and shi stand to make a profit of bet \$12 billion to \$15 billion.

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The merger that backfire

The oil companies now admitted the strength of their case was discovered, Atlantic Richfield, both North Slope pioneers, now expand their marketing operations. The first successful well at Prudhoe and along with its partner, Shell, leases on 4.8 billion barrels. Exxon, 5 billion barrels. To get the oil from these enormous reserves, B.P. entered into ambitious negotiations the notion that the oil would be sold. Those agreements are rising up

Atlantic Richfield, which was the largest buyer of crude, merged with Shell in March, 1969. At the time, AR would be getting plenty of oil from the Saudis and that it would have no problem with thousands of service stations—relatively low cost. With the 1970 oil price fallow, however, the merged company decided instead to buy still more oil from the Saudis, relies on outside sources for its oil. The problem today would be even more acute.



The extraordinary engineering problems involved in building a pipeline through the Alaskan wilderness will make the trans-Alaskan project—assuming it is built—the most expensive construction undertaking in history. Alyeska Pipeline Service Co., a consortium of seven oil companies, estimates that the 789-mile pipeline will cost \$3 billion. Alyeska's biggest engineering problems are posed by permafrost, the mixture of ice, soil, and gravel that lies only inches below the surface of the tundra; an exposed section of permafrost is shown in the top photograph. Since friction will keep the oil at temperatures of up to 150° as it moves through the pipeline, the delicate tundra would be endangered if the pipe were laid underground or on the surface. Alyeska plans to place about 45 percent of the line aboveground in those areas where the permafrost is composed largely of ice. The Department of the Interior, which authorized construction of the line across federal lands, has stipulated that Alyeska must replace any vegetation it damages. To this end, the pipeline company is sponsoring experiments by the University of Alaska at Fairbanks (center photograph) with vegetation and soil taken from the proposed route. Earthquakes are a hazard, since the 48-inch pipeline must cross five seismic zones. Alyeska says that tests at the University of California's Berkeley campus (bottom photograph) indicate that the force from a major quake could bend the pipe, but wouldn't break it.

the Western oil companies in Iraq were nationalized.) If U.S. consumption of petroleum continues to grow at the present rate, and if the North Slope remains undeveloped, imports will rise from the present 3,800,000 barrels a day to 10,900,000 by 1980.

While production on the Slope would scarcely eliminate the nation's dependence on imports, it would go a long way toward bridging the gap. At full production the petroleum is expected to flow at more than two million barrels a day. Moreover, during the anticipated twenty-year life of the field, North Slope oil could prevent \$2 billion a year from being added to the U.S. balance-of-payments deficit.

The oil also could work some wonders for the companies involved. With petroleum selling on the West Coast for upwards of \$3.20 a barrel, the proved reserves on the Slope should generate gross revenues of at least \$38 billion over the twenty-year production period, even without price rises. After allowing for taxes and royalties, and the costs of drilling, piping, and shipping, the companies would stand to make a profit of between \$1 and \$1.25 a barrel, or \$12 billion to \$15 billion.

Even if they never invested another cent, it would be a severe financial blow to the companies if they were forced to abandon the Slope. They paid more than \$900 million for leases, primarily at an auction sponsored by the state of Alaska in September, 1969. (The state retains full ownership of the leased land, while the companies have only the mineral rights.) About \$550 million has been spent on preliminary drilling and other exploration activities. In addition, seven companies—Standard Oil (N.J.), Atlantic Richfield, Standard Oil (Ohio), Mobil, Phillips, Union, and Amerada Hess—are participating in a consortium, called Alyeska Pipeline Service Co., which intends to build the trans-Alaskan line. Alyeska has spent \$350 million toward the ultimate \$3-billion cost, including \$120 million for the pipe itself, which currently is stacked in 69,000 pieces at three locations in Alaska. Conceivably, some of the pipe could be sold if the project fell through. But if the environmentalists win in the courts, almost all of the \$1.8 billion already invested on the Slope could be lost.

The merger that backfired

The oil companies now admit that they badly underestimated the strength of their opponents. Not long after oil was discovered, Atlantic Richfield and British Petroleum, both North Slope pioneers, made aggressive moves to expand their marketing operations. Atlantic Richfield drilled the first successful well at Prudhoe Bay in January, 1968, and along with its partner, Standard Oil (N.J.), it holds leases on 4.8 billion barrels. B.P. has an interest in about 5 billion barrels. To get the maximum financial return from these enormous reserves, both Atlantic Richfield and B.P. entered into ambitious merger agreements, based on the notion that the oil would begin to flow in 1972. Now those agreements are rising up to haunt them.

Atlantic Richfield, which historically has been a net buyer of crude, merged with Sinclair Oil, also a net buyer, in March, 1969. At the time, Atlantic assumed that it soon would be getting plenty of oil from its Alaskan holdings, and that it would have no problem supplying Sinclair's thousands of service stations—not to mention its own—at a relatively low cost. With the North Slope continuing to lie fallow, however, the merged company has been forced instead to buy still more oil from its competitors; it now relies on outside sources for 37 percent of its needs. Its problem today would be even larger if it had not sold off

10,000 East Coast service stations to British Petroleum in 1969 for \$400 million.

As one might expect, Atlantic Richfield's financial condition has begun to deteriorate. Net income slipped last year despite a 14 percent rise in revenues, and the company's supply of cash and equivalents, never large, slumped to \$137,300,000, or just 2.9 percent of assets. Things became even worse in the first quarter of this year, as net income fell 39 percent below 1971's first quarter. Atlantic Richfield stock, which boomed to \$135.75 a share in the euphoric days after the Prudhoe Bay discovery, recently was selling for less than half that price. To meet the financial crisis, the company has trimmed 3,000 of its 30,000 employees from the payroll, and it plans to reduce the total by another 2,700 before the end of next year. The company also will sell 9,000 of its 22,000 remaining service stations, a move that will help balance its needs with current production. Of all the participants in the North Slope venture, Atlantic Richfield clearly is being hit hardest by the long wait for the Alaskan crude. "The steps we're taking are steps needed to put us in a competitive position, with or without North Slope oil," says Louis M. Ream Jr., an executive vice president.

British Petroleum, for its part, had planned to use its North Slope reserves to establish itself as a major force for the first time in the American market. Soon after the discovery at Prudhoe Bay, B.P., which previously had no retail outlets in the U.S., bought those 10,000 service stations from Atlantic Richfield. B.P. then signed an agreement designed to give it a majority interest in Standard Oil Co. (Ohio), which has a strong marketing organization in the Midwest and middle Atlantic states.

With production delayed on the Slope, however, the terms of the agreement could turn out to be less favorable for the British company. Under the agreement, B.P. handed over to Sohio all of its holdings on the North Slope, although it retained the rights to about 75 percent of the profits. B.P. also gave Sohio its two U.S. refineries, located at Port Arthur, Texas, and Marcus Hook, Pennsylvania, all of its U.S. service stations, and some other U.S. properties. In return, B.P. immediately received 25 percent of Sohio's stock, with the chance to increase its equity, depending on the speed and volume of production on the Slope. B.P. will end up owning 54 percent of Sohio if the reserves it gave the company are producing at least 600,000 barrels of oil per day by the end of 1977.

Hollow footsteps, empty roads

Those reserves probably are capable of producing substantially more than 600,000 barrels a day, but there is a strong chance that the deadline will not be met. And the agreement does not contain any escape clauses to cover delays caused by circumstances beyond B.P.'s control. In short, if the trans-Alaskan pipeline isn't built, B.P. could lose its big opportunity to establish a competitive marketing organization in the U.S., an opportunity that may never come again. Moreover, it would be saddled with a large, unprofitable investment in a lackluster company; the Sohio stock, which cost B.P. more than \$400 million in assets, had a recent value of less than \$350 million.

A visitor to the proposed route of the trans-Alaskan pipeline sees only the scantest traces of activity these days. Skeleton work forces are maintained at the eight pipeline construction camps scattered through the wilderness. Isolated from the outside world, the men have little to do but eat, read magazines, play table tennis, and drift about the

dormitories. Flying between the 4,000-foot Brooks Range and over the Slope itself is occasional derrick on the horizon. Drilled—*in desultory fashion*—at just a few B.P.-Sohio properties. In the large, modern buildings which were built to accommodate hundreds of footsteps produce hollow echoes, and no life is to be found on the sixty miles of new road that wind through the region.

One of the prime victims of the delay is Alaska. After the strike at Prudhoe Bay, the state went a massive invasion; everyone from politicians to tourists heading for the state, putting a strain on the airlines, hotels, and restaurants. Today, with activity on the North Slope still in its infancy, visitors from the "lower 48" are still flocking to Palm Beach.

Alaska digs into capital

Alaska expected to make perhaps \$300 million from royalties and taxes once oil production reaches its peak. Unfortunately, the state cannot afford to live longer for those extra revenues. In 1970, assuming that the payments would begin in 1973, passed a series of public-works programs that more than doubled the state's budget. Currently is spending about \$300 million annually, receiving less than \$200 million in taxes and income, and it is meeting the surplus by cutting—*in particular*, the \$900-million windfall from the auction of leases in 1969. If oil production does not begin by 1977, it appears, the state will be forced to halving its budget or going bankrupt. Governor A. Egan understandably finds such a choice difficult. "With the vast needs that are still unmet in the fields, it would be virtually impossible to turn back," he declares.

Businessmen throughout Alaska are to be pitied. In 1969 and 1970, entrepreneurs began a boom. Drilling suppliers, building contractors, clothing suppliers, and souvenir dealers all, in a few, sank large sums of money into equipment and facilities. Now many of them are saddled with goods and services they can't sell.

One dramatic case in point is Alaska Air, one of several intrastate carriers. During 1969, it did a land-office business in both passenger and cargo revenues leaped 43.5 percent to an all-time high of \$10 million, and for the first time in nine years turned a profit. Anticipating more of the same, the airline almost doubled its fleet and expanded its routes. But now the airline's revenues are in a nose-dive, and it has resumed its money-losing ways, registering a loss in 1970, 1971, and the first quarter of this year.

When the oil companies began making their money on the North Slope, they had every reason to believe they would have a free hand in tapping the rich oil field. Substantial new additions to the Slope reserves had traditionally been welcomed with open arms. And the North Slope was the largest single oil field made on U.S. territory, twice as bounteous as the East Texas field discovered in 1930.

Moreover, the Alaskan discovery occurred at a time—just as production in the rest of the country was beginning to reach its peak. Onshore production in Texas and California, by far the three top oil-producing states, was also beginning to decline.

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et, Atlantic Richfield's financial condition deteriorate. Net income slipped last year, a 10 percent rise in revenues, and the company's assets, never large, slumped last year by 2.9 percent of assets. Things began to improve in the first quarter of this year, as net income rose above 1971's first quarter. Atlantic Richfield's share price boomed to \$135.75 a share in the wake of the Prudhoe Bay discovery, recently selling at half that price. To meet the financial needs, the company has trimmed 3,000 of its 30,000 employees, and it plans to reduce the total by another 10,000 by the end of next year. The company has 22,000 remaining service stations, but to balance its needs with current participants in the North Slope venture, the company is being hit hardest by the long delay in crude. "The steps we're taking are to put us in a competitive position, with or without oil," says Louis M. Ream Jr., an executive.

Atlantic Richfield, for its part, had planned to use its assets to establish itself as a major force in the American market. Soon after the Prudhoe Bay discovery, B.P., which previously had no U.S. assets, bought those 10,000 service stations from Atlantic Richfield. B.P. then signed an agreement to acquire a majority interest in Standard Oil, which has a strong marketing organization in the middle Atlantic states.

Delayed on the Slope, however, the venture could turn out to be less favorable for the company. Under the agreement, B.P. sold all of its holdings on the North Slope, but retained the rights to about 75 percent of the revenue from Sohio's two U.S. refineries, located in Tulsa, Oklahoma, and Marcus Hook, Pennsylvania, all of which are owned by B.P. Immediately after the acquisition, B.P. received 25 percent of Sohio's net income to increase its equity, depending on the amount of production on the Slope. B.P. will receive 10 percent of Sohio if the reserves it gave up are producing at least 600,000 barrels of oil a day by the end of 1977.

Empty roads

Probably are capable of producing substantially more than 600,000 barrels a day, but there is a question whether the deadline will not be met. And the agreement does not contain any escape clauses to cover circumstances beyond B.P.'s control. In the event the Alaskan pipeline isn't built, B.P. could be left with a minority interest in a competitive market in the U.S., an opportunity that may not be as attractive. Moreover, it would be saddled with a large investment in a lackluster company; the investment cost B.P. more than \$400 million in the value of less than \$350 million.

The proposed route of the trans-Alaskan pipeline has the scantest traces of activity these days. The pipeline is maintained at the eight pipeline stations scattered through the wilderness. Inside the world, the men have little to do but play table tennis, and drift about the

dormitories. Flying between the 4,000-foot peaks of the Brooks Range and over the Slope itself, one sees only an occasional derrick on the horizon. Drilling is being conducted—in desultory fashion—at just one well, on the B.P.-Sohio properties. In the large, modern compounds, which were built to accommodate hundreds of workers, footsteps produce hollow echoes, and not a single vehicle is to be found on the sixty miles of new man-made roads that wind through the region.

One of the prime victims of the delay is the state of Alaska. After the strike at Prudhoe Bay, the state underwent a massive invasion; everyone from oilfield roughnecks to top executives to tourists headed for Alaska, putting a strain on the airlines, hotels, and restaurants. But today, with activity on the North Slope at a virtual standstill, visitors from the "lower 48" are almost as rare as Eskimos in Palm Beach.

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Alaska expected to make perhaps \$300 million a year from royalties and taxes once oil production reached its peak. Unfortunately, the state cannot afford to wait much longer for those extra revenues. In 1970 the legislature, assuming that the payments would begin to trickle in by 1973, passed a series of public-works and social-welfare programs that more than doubled the budget. The state currently is spending about \$300 million a year while receiving less than \$200 million in taxes and investment income, and it is meeting the surplus by digging into capital—in particular, the \$900-million windfall it received from the auction of leases in 1969. If oil production does not begin by 1977, it appears, the state will face the choice of halving its budget or going bankrupt. Governor William A. Egan understandably finds such a choice intolerable. "With the vast needs that are still unmet in Alaska in all fields, it would be virtually impossible to roll the clock back," he declares.

Businessmen throughout Alaska are today a crestfallen lot. In 1969 and 1970, entrepreneurs began gearing for the boom. Drilling suppliers, building contractors, food processors, clothing suppliers, and souvenir dealers, to cite just a few, sank large sums of money into equipment and inventories. Now many of them are saddled with big debts, and with goods and services they can't sell.

One dramatic case in point is Alaska Airlines, the largest of several intrastate carriers. During 1969 the company did a land-office business in both passengers and cargo. Its revenues leaped 43.5 percent to an all-time high of \$39 million, and for the first time in nine years the company turned a profit. Anticipating more of the same, Alaska Airlines almost doubled its fleet and expanded its schedule. But now the airline's revenues are in a nose dive, and it has resumed its money-losing ways, registering large deficits in 1970, 1971, and the first quarter of this year.

When the oil companies began making their investments on the North Slope, they had every reason to suppose that they would have a free hand in tapping the newly discovered field. Substantial new additions to the domestic reserves had traditionally been welcomed with enthusiasm. And the North Slope was the largest single discovery ever made on U.S. territory, twice as bounteous as the celebrated East Texas field discovered in 1930.

Moreover, the Alaskan discovery occurred at a propitious time—just as production in the rest of the U.S. was about to reach its peak. Onshore production in Texas, Louisiana, and California, by far the three top oil-producing states,

already has begun to slide. If the demand for petroleum continues to rise at the recent rate of 4 percent a year, Americans will find themselves relying on foreign sources for most of their supply during the 1980's. Of the 5.5 billion barrels consumed in the U.S. last year, only 4.1 billion barrels, or less than three-fourths, were produced domestically. By 1980 the demand is expected to surge to 7.9 billion barrels, while domestic production, excluding the North Slope, will decline to just under 4 billion barrels.

The great refinery ban

Even aside from the North Slope controversy, the U.S. oil industry is now facing another problem that has worldwide dimensions. Among their more dramatic achievements, the environmentalists have brought the construction of refineries in the U.S. almost to a halt. Delaware, which has one refinery, recently passed a law prohibiting construction of any more, and the officials of most other states have imposed a de facto ban on new refineries. There are some 300 refineries in the U.S., but at least 100 more will be needed to meet the increased demand by 1980. Only two are under construction—in Illinois and Louisiana—and only one, to be built in Baltimore, is on the drawing boards. On the West Coast, where the environmental movement has its roots and its strongest adherents, it could be political suicide for a city administration to allow the construction of refineries. Yet that area will need two or three new refineries per year over the next decade to cope with the expanded demand for petroleum products.

One solution would be to build the refineries abroad, and ship the refined products to the U.S. Exporting the nation's environmental problems would have a stiff price, however, even if foreigners were willing to accept plants that Americans find unbearable. If foreign refineries were used to serve the U.S., the cost of petroleum products would almost certainly increase substantially. Building new refineries abroad also would mean exporting thousands of jobs, and it would contribute to the deterioration of the nation's balance-of-payments position. And yet if the new refineries are not built *somewhere*, the U.S. will be forced to drastically curtail its energy needs.

Mr. Brower's kooky thought

As they continue to press their case in the courts, the environmentalists are stressing two basic points. They contend, first of all, that Secretary Morton acted capriciously in ruling for the pipeline. They say Morton's decision flew in the face of evidence presented in the Interior Department's own "environmental-impact statement" on the pipeline, which was issued last March as required by the National Environmental Policy Act. They also contend that the impact statement did not give adequate consideration to other possible means of getting the oil off the North Slope; the act specifies that impact statements must weigh the merits of "alternatives to the proposed action." The environmentalists say they still have high hopes for victory. "It's my kooky thought that some day we're going to get a grant from the oil companies for saving them from a horrible mistake," says David Brower, president of Friends of the Earth and doyen of the environmental movement.

At the moment, there aren't many oilmen around who would give David Brower the time of day, but some will at least concede that the delay in building the trans-Alaskan pipeline has produced one advantage. The safeguards imposed on Alyeska Pipeline Service Co. will make the line

—assuming it is built—a much safer one than it would have been otherwise. It is moose, caribou, salmon, sheep, and waterfowl of the area that will be protected. Environmentalists say that the companies themselves have a strong interest in preventing breaks, leaks, and spills, and so to believe that the pipeline, as originally planned, would have had more than its share of the problems.

Of course, the Alyeska consortium is planning the improvements. In the early planning stages, it was estimated that the pipeline would cost \$1.5 billion. L. Patton, president of Alyeska, says that the environmental safeguards will add \$1 billion. In addition, an extra \$1 billion will be needed for inflation, and by engineering problems that arose during the preliminary studies. The total cost of \$3 billion would make this not only the most expensive pipeline ever built, but also the most complex project in history.

The pig in the pipeline

In the most radical change from the original plan, half of the proposed pipeline will be buried. At the start, it had been assumed that all the pipeline would be buried. But the planners soon ran into the difficulties presented by permafrost, soil, gravel, and ice that lies only a few feet below the Alaskan tundra. The oil from the pipeline, coursing through the pipeline at 150° Fahrenheit. In areas where the water content, a buried pipeline, or the tundra, would turn the surrounding ground into a slush, and the line, deprived of support, would strain. Under the present plan, 17 miles of the pipeline will be supported above the ground. The other 17 miles will lie on thick gravel pads, with a jacket of insulation, and 3 miles will be buried without any special precautions.

Alyeska admits that it cannot protect the line against leaks, but it says it has taken steps to prevent and detect them. It has installed shaped electronic sensing devices, which will monitor the line at frequent intervals. The company also has a figuration of the entire pipeline on which technicians can spot any significant changes. The pipeline reportedly can sense leaks of five gallons per hour. In the case of major leaks or strains, the pipeline communication system will trigger an alarm. Valves will be activated to isolate any portion of the line where a leak occurs. Alyeska says that even the most severe leaks will cause leakage greater than 64,000 gallons of oil, it is less than 1 percent of the total capacity of the line.

Part of the original pipeline route was to avoid areas where there is a strong history of landslides, flooding, or earthquakes. But this cannot be avoided entirely, however, because the pipeline must cross five seismic zones, including the one that was hit by the great earthquake of 1964. The pipeline, which is forty-eight inches in diameter and one inch thick, is strong and resilient even after the 1964 quake.

The pipeline company will take over a 800-acre port and terminal at Valdez. Valdez is a new town, built on the site of the original town of that name.

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—assuming it is built—a much sounder project than it would have been otherwise. It is more than just the caribou, salmon, sheep, and waterfowl of the Alaskan wilderness that will be protected. Environmental considerations aside, the companies themselves have a strong financial interest in preventing breaks, leaks, and spills. And there is reason to believe that the pipeline, as originally conceived, would have had more than its share of these mishaps.

Of course, the Alyeska consortium will have to pay for the improvements. In the early planning stages it was estimated that the pipeline would cost \$1.5 billion. Edward L. Patton, president of Alyeska, now estimates that environmental safeguards will add \$450 million to the cost. In addition, an extra \$1 billion will be accounted for by inflation, and by engineering problems not foreseen at the time of the preliminary studies. The over-all cost of some \$3 billion would make this not only the most expensive pipeline ever built, but also the most expensive construc- tion project in history.

The pig in the pipeline

In the most radical change from the original plan, almost half of the proposed pipeline will lie aboveground. At the start, it had been assumed that all but 5 percent of the line would be buried. But the planners failed to reckon fully with the difficulties presented by permafrost, that mixture of soil, gravel, and ice that lies only inches below much of the Alaskan tundra. The oil from the Slope will be hot, coursing through the pipeline at temperatures of up to 150° Fahrenheit. In areas where the permafrost has a high water content, a buried pipeline, or one resting directly on the tundra, would turn the surrounding area to marshland, and the line, deprived of support, might break from the strain. Under the present plan, 178 miles of the pipeline will be supported above the ground on cement stilts, 177 miles will lie on thick gravel pads, 70 miles will be buried with a jacket of insulation, and 364 miles will be buried without any special precautions.

Alyeska admits that it cannot absolutely guarantee against leaks, but it says it has taken extraordinary measures to prevent and detect them. It plans to send a torpedo-shaped electronic sensing device, called a "pig," through the line at frequent intervals. The pig will record the configuration of the entire pipeline on tape, permitting technicians to spot any significant changes; the device purportedly can sense leaks of five gallons an hour or more. In the case of major leaks or strains, an electronic communication system will trigger an automatic shutdown of the line. Valves will be activated by remote control to isolate any portion of the line where there is a problem. Alyeska says that even the most severe rupture would not cause leakage greater than 64,000 barrels. While that is a lot of oil, it is less than 1 percent of the line's capacity.

Part of the original pipeline route has been altered to avoid areas where there is a strong possibility of avalanches, flooding, or earthquakes. Earthquake zones could not be avoided entirely, however, and the line will cross five seismic zones, including the one that was devastated by the great earthquake of 1964. Alyeska claims that the pipe, which is forty-eight inches in diameter and half an inch thick, is strong and resilient enough to have withstood the 1964 quake.

The pipeline company will take measures to secure the 800-acre port and terminal at Valdez against natural disasters. Valdez is a new town, built a few miles from the site of the original town of that name, which was wiped

continued page 110

The Escalating War for Alaskan Oil continued from page 84

out by the quake and a tidal wave. The proposed facility will be placed on a promontory, with its lowest point 200 feet above sea level, and the foundations of the buildings will be built into bedrock.

With all that tanker traffic moving into Valdez—forty-one tankers averaging 160,000 deadweight tons each would be operating between the town and the West Coast if the North Slope were operating at full capacity—Alyeska is planning a navigational system that it describes as “second to none in the world.” Tankers moving in and out of the port will be required to carry two radar systems, one continuously in use, the other as a backup. As the vessels approach Valdez, they will have to maintain constant radio communication with the terminal, and with other tankers in the vicinity. Only one-way traffic will be allowed in the three-mile-wide channel leading past the port, and in bad weather navigation will be helped by a fog signal audible at a distance of two miles. There also will be a light visible at a distance of twelve miles. Alyeska is making a virtue of the fact that cargo shipped between U.S. ports must, under the law, be carried in U.S.-flag vessels. Environmentalists are constantly raising the specter of maritime disasters, such as the destruction of the *Torrey Canyon* off the coast of Cornwall in 1967; Alyeska has responded that U.S. ships are subject to more stringent inspection and safety regulations than foreign-flag vessels.

A Canadian corridor

Despite all the precautions, the environmentalists contend that the risks are too great to justify a trans-Alaskan pipeline. Instead they suggest a frequently mentioned trans-Canadian alternative, with a line proceeding east from the North Slope, across the Yukon Territory to the Mackenzie River delta, then south to Alberta and on into the midwestern U.S. The Canadian route would be about four times longer than the Alyeska route, but part of the line could be integrated with the network of pipelines already extending between Alberta and the U.S. Such a project would cost between \$5 billion and \$6 billion, and could not be completed before 1977. But there is no doubt that, time and money notwithstanding, the proposal has some important advantages. Most important of all, it would parallel a pipeline planned to carry more than 26 trillion cubic feet of natural gas off the North Slope. (Several U.S. companies, including Atlantic Richfield, Standard of Ohio, and Jersey Standard, have joined a consortium to build the gas pipeline, and the project may be started within a year.)

In the minds of some industry executives, the need for production of the immense natural-gas reserves on the Slope is even more pressing than the need for oil. Proved natural-gas reserves in the U.S. are down to about a twelve-year supply, the lowest ever. Moreover, many experts believe that no major new discoveries of gas will be made south of the Canadian border. To fill the demands of U.S. customers, natural gas is now being imported in liquefied form from Algeria at a cost three times greater than for the domestic product, and a number of companies have announced plans to import liquefied gas from the Middle East. But however impressive the economic argument, here again the oil companies face a dilemma, since the North Slope gas cannot be moved to U.S. markets until production of the oil begins. Thornton F. Bradshaw, president of Atlantic Richfield, sums up the frustration of industry executives when he remarks, “We need it now. When I say we, I

mean the country. I think it's not a question of whether Atlantic Richfield company needs it.”

Since the Canadian Government has a transportation corridor that would include a line but also a highway and space for a pipeline, environmentalists say that it would be unnecessary and wasteful to use a separate route across Alaska. North Slope oil is not piped through Canada, though it will begin production of its own Arctic oil reserves by 1980. It would need an oil line by 1980.

The advocates of a trans-Canadian route have several other potent arguments. A recent study by J. Cicchetti, an economist with Resources for the Future, a nonprofit research organization based in Washington, D.C., includes that the oil companies might actually find the Canadian route more profitable than the Alaskan route. If so, the companies could get a higher price for the oil in the Midwest. The average price per barrel in the Midwest is 45 cents more than on the West Coast. A trans-Canadian line would also eliminate the need for port facilities and tankers.

The Yokohama gambit

There are a number of reasons why the oil companies object to the proposed trans-Canadian pipeline. One reason they might want to sell some of the North Slope oil is that the plan that would be ruled out if the oil were shipped to the West. On the surface, it might seem impossible to get oil in Japan; the price per barrel there is about twice that on the West Coast, and the shipping distance is nearly twice that between Los Angeles and Yokohama. But John M. Houchin, deputy president of Phillips Petroleum, has proposed an “export program” that would make sales to Japan profitable.

The proposal, made two years ago to a committee of the House of Representatives, was that companies exporting oil to Japan be allowed to increase their imports on the East Coast if the market price of oil on the East Coast is \$3.00 per barrel or less. The West Coast is the highest in the country, and the imports would be shipped on foreign tankers, which can be chartered at lower rates than the rates for U.S. vessels. Moreover, the oil could also be carried in foreign tankers.

The oil companies now prefer to stress self-sufficiency and play down the possibility of a port deal. A spokesman for Phillips Petroleum said Houchin's proposal was “made at a time when the West Coast would not be able to absorb the production of oil from the North Slope.” He said the proposal would duplicate that North Slope production could be used to make up the difference between production and demand on the West Coast during the late Seventies and early Eighties.

Another reason the oil companies reject the trans-Canadian pipeline is because of concern about a political rift between the U.S. and Canada. Canadians are in a difficult position. The provincial and federal governments want to restrict the American role in a trans-Canadian pipeline. Macdonald, the Canadian Minister of Energy and Mines, acknowledges that the money for a trans-Canadian pipeline would have to come from American investors, but he insists that the pipeline be owned by Canadian companies and regulated by the Canadian Energy Board.

Some U.S. oil executives fear that the Canadian government might cut off the flow from Alaska

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begin production of its own Arctic oil reserves, probably will
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eign tankers, which can be chartered at little more than half
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The oil companies now prefer to stress the virtues of U.S.
self-sufficiency and play down the possibility of an import-ex-
port deal. A spokesman for Phillips Petroleum explains that
Houchin's proposal was "made at a time when it appeared
the West Coast would not be able to absorb the entire pro-
duction of oil from the North Slope." Current projections in-
dicate that North Slope production could just about make
up the difference between production and demand on the West
Coast during the late Seventies and early Eighties.

Another reason the oil companies reject a trans-Canadian
pipeline is because of concern about a political clash between
the U.S. and Canada. Canadians are increasingly sensitive
about American companies dominating their economy, and
the provincial and federal governments would be likely to re-
strict the American role in a trans-Canadian line. Donald S.
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The Escalating War for Alaskan Oil *continued*

in the Canadian Arctic are ready for production. Rawleigh Warner Jr., chairman of Mobil Oil, remarks, "It is a real possibility that the Canadian Government might very properly say to us: 'When we have as much oil as we want, you can put yours in.'" This viewpoint received some support from Secretary Morton, who in his statement last May stressed the need for "a secure pipeline located under the total jurisdiction and for the exclusive use of the United States."

But Macdonald, who had appealed to Morton for American cooperation, scoffs at such arguments, saying that the two governments can agree in advance on a throughput schedule. Macdonald points out that some oil lines serving Canada run through U.S. territory; he says that even if the worst came to pass, his country would stand to lose more, since "the Americans could shut down all of Eastern Canada."

How far will consumers go?

As the tug of war on the North Slope demonstrates, rising public concern over the environment is having powerful—and costly—repercussions for the oil industry. It has created a frustrating business environment for executives who, not so long ago, could concentrate exclusively on problems of engineering, transportation, and marketing. Moreover, the attacks at home come at a time when some formidable adversaries have achieved powerful political positions among formerly compliant regimes in the Middle East and North Africa. (See "How the Arabs Changed the Oil Business," FORTUNE, August, 1971.) In negotiations last year with the members of the Organization of Petroleum Exporting Countries, the Western oil companies were coerced into granting \$15 billion in additional taxes over a five-year period. Negotiations with O.P.E.C. will begin again in three years, before any of the North Slope oil can possibly be brought to market, and it is clear that the oil companies will have to make large new concessions at that time.

The confrontation between the oil companies and the environmentalists certainly will have one important economic result—the cost of all forms of energy, from electric power to gasoline, will increase. No one is sure just how far American consumers are prepared to go to protect their environment. Will they risk an energy shortage that could lead to drastic curtailments in the power supply? Will they lower their standard of living, sacrificing many of the cars, air conditioners, automatic dishwashers, and other goods that account for the continuing surge in the nation's energy demand? In the great debate over Alaskan oil, Americans are beginning—whether they know it or not—to confront these critical issues. **END**

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